FARM INDEX

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The High Price of Gearing Up

Outlook

A record corn crop? Most crop watchers go along with that, but some are skeptical that it's as big as USDA indicated as of September 1, saying that too much rain early in the season damaged roots and stalks.

Either way, the situation is interesting when you look at the conditions that led to the current prospects.

What appeared to be a problem crop because of late planting could turn out to be a winner mostly because of good growing weather through August. Then hot, dry weather in September in the Corn Belt raised fears of damage from stalk rot.

Here's a recap of the makings of a bumper harvest.

Uniform yields. Though not all the big corn States will score record yields this year, yields as of September 1 looked uniformly good. Nationally, they'll average a record 100 bushels an acre, according to the September crop report (latest estimate was not available at this writing). Last year's yield rounded out to 91 bushels.

For contrast between this year and last, let's consider the top five corn-producing States. In 1977, yields among these States ranged from 88 bushels an acre in Iowa to 105 in Illinois. This year, again using the indicated yields in the September crop report, yields will range from 97 bushels in Minnesota to 116 in Illinois, followed closely by Iowa with 115.

Explanation. The set-aside program no doubt played a role, since the enrolled farmers tend to withdraw from production the land that's not the best yielding. As a rule of thumb, for every million acres taken out of corn, yields go up an average of half a bushel.

But, the area harvested this year is down only about 2 million acres from 1977's 70 million. Thus, the decrease in area alone didn't account for the surge in yields.

Did corn growers apply more fertilizer for the current crop? Could be, but hard figures are not yet available. It's possible, too, that farmers used higher quality seed than was available for the 1977 crop.

The blessings of weather. Without question, weather patterns in the summer of 1978 favored corn. For the first time in 3 or 4 years, no extensive pockets of drought showed up in the key corn States.

Certainly, no multi-county areas were wiped out by dry weather, as happened in 1974 and again in 1976 and 1977. Most of the Corn Belt received 2 or 3 inches of rain during the critical pollination period in mid-July.

Turning point. The cool, wet spring delayed corn plantings, but conditions improved in June, with temperatures approaching normal in most of the Nation.

July was a typical summer month. However, cool air moved down from Canada with more frequency than in recent years. As the cool air went south and east, it met the warm air from the South, producing the rain the corn crop needed. Also, it wasn't excessively hot during the critical pollination period throughout most of the Corn Belt.

In August, the weather was warmer than normal east of the Rockies, again favoring development of the corn crop.

In a nutshell, barring an early killing frost, the 1978 corn crop could go down as the largest in history. That also means that total feed grain supplies (production plus carryover) will be the biggest ever.

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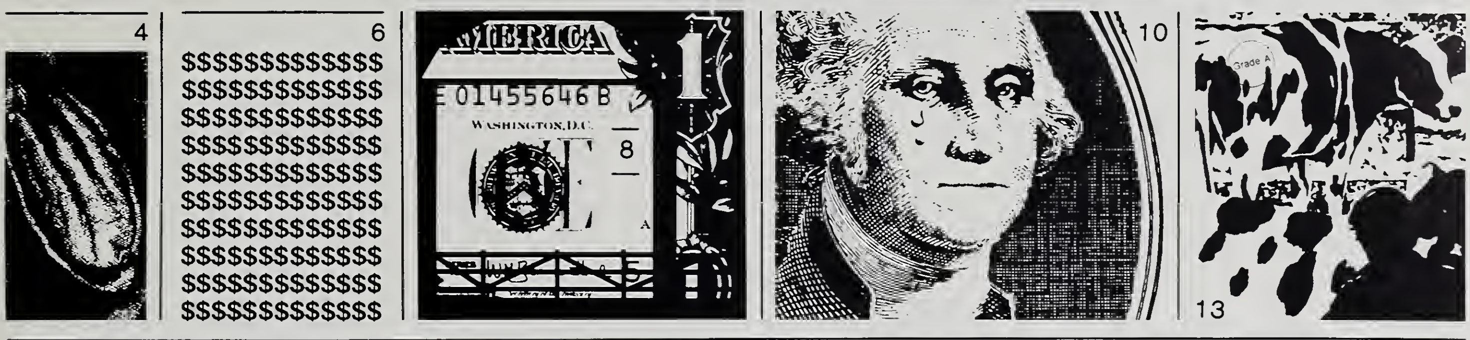

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Daniel R. Williamson, Editor
Dorothy Mayes, Martha Newton, Associate Editors; Jerry Casbolt, Staff Editor;
Martin Schubkegel, Contributing Editor; Jonathan Kirk, Art Director.

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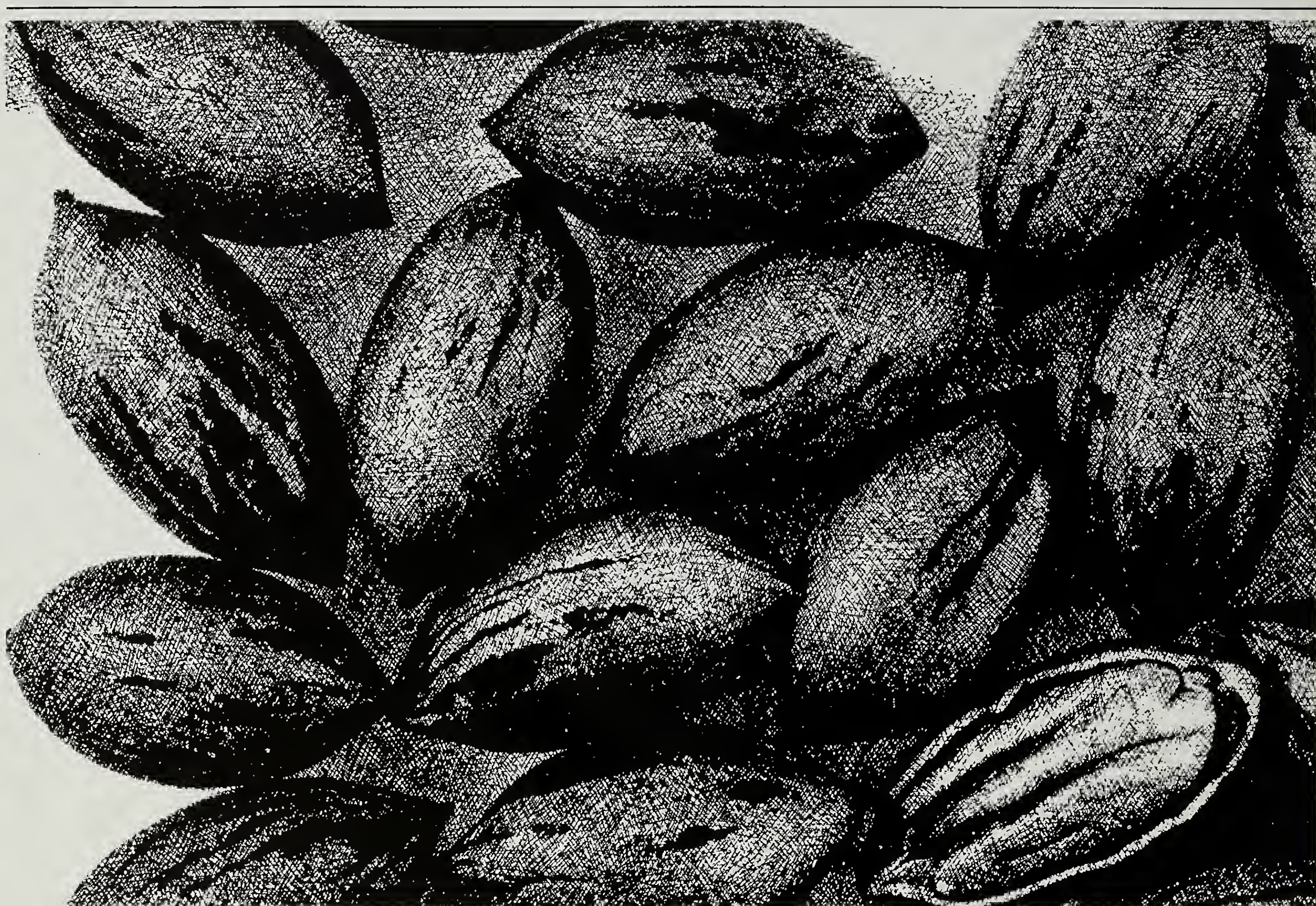
The Pecan: America's Hard-Luck Nut



To those who have tasted the tempting foods made with pecans—such as the Epicurean's favorite, old-fashioned pecan pie—it's easy to imagine this delicious "King of Nuts" running circles around its competitors.

But, oddly enough, it hasn't. Production and sales of pecans have remained at about the same levels as 25 years ago, while the almond and walnut industries have shown dramatic gains nearly every year.

And, to add insult to injury, per capita consumption of pecans fell substantially during the 1950-76 period, while just the opposite was true for its two top competitors.

So what's the story behind the King's downfall? Stated simply, there has not been a concerted effort to develop markets for pecans. And not just international markets.

Northern ignorance. Since pecans are indigenous to the southern part of the country, some Northerners don't even know what pecans taste like.

Right now, pecans are produced in the U.S., Mexico, and a few other countries. We are by far the world's largest producer, generally accounting for more than 95 percent of the annual world crop.

Because pecan production tends to be highly erratic, a bad year can be followed by an extremely good one. And sometimes, because of the nut's biennial

production cycle, a year can be both good and bad, with some operators making fortunes and others losing their shirts.

Erratic production cycle. To illustrate the pecan's erratic production cycle in this country, three 4-year averages have been compared. U.S. pecan production rose from an average of 139 million pounds in 1954-57 to 206 million in 1964-67. Then, reflecting the very poor 1976 crop (when only 103 million pounds were marketed), production declined to an average of 184 million pounds in 1974-77.

Since 1970, an increasing proportion of the U.S. production has been of improved varieties of pecans, rather than from the native, or wild, trees. This reflects the influence of the new varieties, especially in the west Texas-New Mexico-Arizona production area.

As the world's second largest pecan producer, Mexico boasts a healthy industry. Production rose from an average of less than 1,000 metric tons in 1954-57 to about 27,000 in 1974-77.

Mexican production. Per capita consumption of pecans has also grown swiftly in Mexico. The result: Exports of this nut to America have been small and have occurred only in years of meager crops and high prices in the U.S.

Besides the U.S. and Mexico, several other countries have developed pecan industries (until 1950, we and our southern neighbor were the only producers).

Israel now has about 7,500 acres of pecan trees, and since only half are of bearing age, increased production can be expected in the future.

Israel's pecan production has risen steadily since the first report in 1966, when only 60 metric tons were recorded, to 1977, when 1,500 metric tons were harvested. This year, the country expects a crop of 1,800 metric tons.

Israeli cooperatives. About two-thirds of Israel's pecans are marketed through a grower cooperative which has its own shelling plant. The country expects to export about 1,000 metric tons of pecans a year by 1980, with the bulk of the exports going to Europe. Europe currently takes about 200-300 metric tons of Israel's pecans a year.

In Australia, pecans are grown mainly in New South Wales and Queensland, although small crops have been recorded in Western Australia in the past few years.

The country has almost 2,000 acres of pecan trees, all of which were planted by a grower from the U.S. In the near future, most of Australia's pecan production will be exported to America, since the local industry is having trouble finding consumer acceptance in Australia.

Australian nuts. Detailed information on Australia's pecan production is not readily available, as Queensland recently changed its method of recording statistics, which affected Australian totals.

By the same token, utilization data are not available, because Australia's imports and exports of pecans are not recorded separately from other nuts. However, some pecans are being exported to the U.S., and it's expected that these exports will increase as production rises.

Although the South African pecan industry is still small, interest is increasing and many plantations are being established, especially now that new cultivars with high yields are being imported from the U.S.

A young industry. A large number of the country's pecan trees are just beginning to bear fruit, and many South African farmers grow only a few trees for their own use. As a result, the country is a long way from becoming an important pecan exporter. Nevertheless, a few of the nuts are currently exported to Canada and the United Kingdom.

It appears that Israel, Australia, and South Africa are looking to the U.S. as a market for their surplus production. However, pecans are imported into this country only when the domestic crop is small and prices are high. In the past, Mexico has supplied the bulk—if not all—of U.S. pecan imports.

Most of our exports of pecans—75 percent—go to Canada; 15 percent go to Europe; less than 5 percent, Mexico; and the remainder, Japan and other countries. However, only about 5 percent of the U.S. pecan crop goes to exports.

Nuts for export. This is in sharp contrast to the almond and walnut industries, which have aggressively developed, and are highly dependent on, foreign markets. In fact, in the case of almonds, exports now account for more tonnage than is consumed domestically.

However, the picture is not all black for the King of Nuts. The markets for pecans are there, ESCS economists believe, just waiting to be developed. What's needed is greater, more efficient production and a concerted effort on the part of the pecan industry to deliver high-quality nuts on a regular basis and at reasonable prices.

[Based on the speech, "Marketing and Commercialization of Pecans: Trends and Prospects," by Jules V. Powell, Commodity Economics Division, presented at the seventh annual International Conference of Pecan Producers of the Mexican Republic, Monterrey, Mexico, Aug. 18, 1978.]

The Half Million Dollar Club

Farmers will soon be getting their questionnaires for the 1978 Census of Agriculture, and one of the signposts USDA analysts will be watching is what's happened to the growth in large farms since the last census of 1974.

By the way, the census is traditionally run every 5 years but the span has been shortened to 4 years on this round to allow agricultural data to mesh with other economic surveys of the Commerce Department.

ESCS census watchers are guessing that the results for 1978 will show continuation of past trends: Big farms are getting bigger, both in terms of numbers and in the share of the market they control.

Latest data. Figures on farm income, estimated annually, support that hypothesis. Last year, for example, we had 55,000 farms grossing upwards of $200,000, and they sold 36 percent of all farm products. In 1969, only 16,000 farms fell in this sales class, and they claimed just 21 percent of the market.

The 1978 Census of Agriculture will yield information not available on a yearly basis; namely, where our biggest farms are located and what they raise.

Moreover, the census count will include a higher sales class—farms grossing at least $500,000.

If you're interested in the membership of the half-million-dollar club, note these findings from the 1974 census. Again, there's little reason to believe the trend has wavered much since then.

Census gleanings. The last census found that about 11,400 farms had sales exceeding $500,000. On the average, they took in $1.6 million in 1974—45 times more than the average for all farms. Farm size worked out to 4,700 acres, 11 times the national figure.

Here's the kicker: The market share of those big farms went from 13 percent in 1959 to 22 percent in 1974. In the same time span, U.S. agricultural production

grew 21 percent in real terms. In other words, the top 11,400 farms—selling $135,000 or more in 1959—now have a larger share of a larger output.

Census numbers also show that in 1959 there were only around 1,200 with sales of at least a half million, and they had just 6 percent of the market.

Corporations predominate. Regarding farm organization, around 40 percent of our big farms were incorporated in 1974, although sole proprietorships ran a close second with 37 percent.

Geographically, most (60 percent) of the large operations were in the 19 Western States. California alone had almost 2,800 units grossing over $500,000, or about a fourth of the U.S. total. Texas, also high on the list, reported 850 farms in this sales class and they accounted for 7 percent of all sales in 1974.

In general, farms grossing over $500,000 tended to concentrate on commodities requiring large capital investments and relatively small tracts of land.

For example, fed cattle operations accounted for 40 percent of the big farm receipts. Nearly a fifth of large farm sales came from sugarcane, potatoes, and fruits and vegetables.

Commodity shares. Though large farms reported 22 percent of national sales on the average, they had a much greater share of fed cattle, turkeys, eggs, and potatoes. By contrast, tobacco, grains, and milk came in for less than 10 percent.

How did our large farms get to be that way?

Commodity prices rose considerably during 1959-74. As a result, many smaller operations moved into the $500,000-and-over sales class. A feedlot selling 1,200 head in 1959, for instance, had proceeds of around $300,000. By 1974, the same number of head fetched $500,000.

But more importantly, big farms tend to have larger out-of-pocket expenses than the small units, and the added investment is reflected in their higher gross sales.

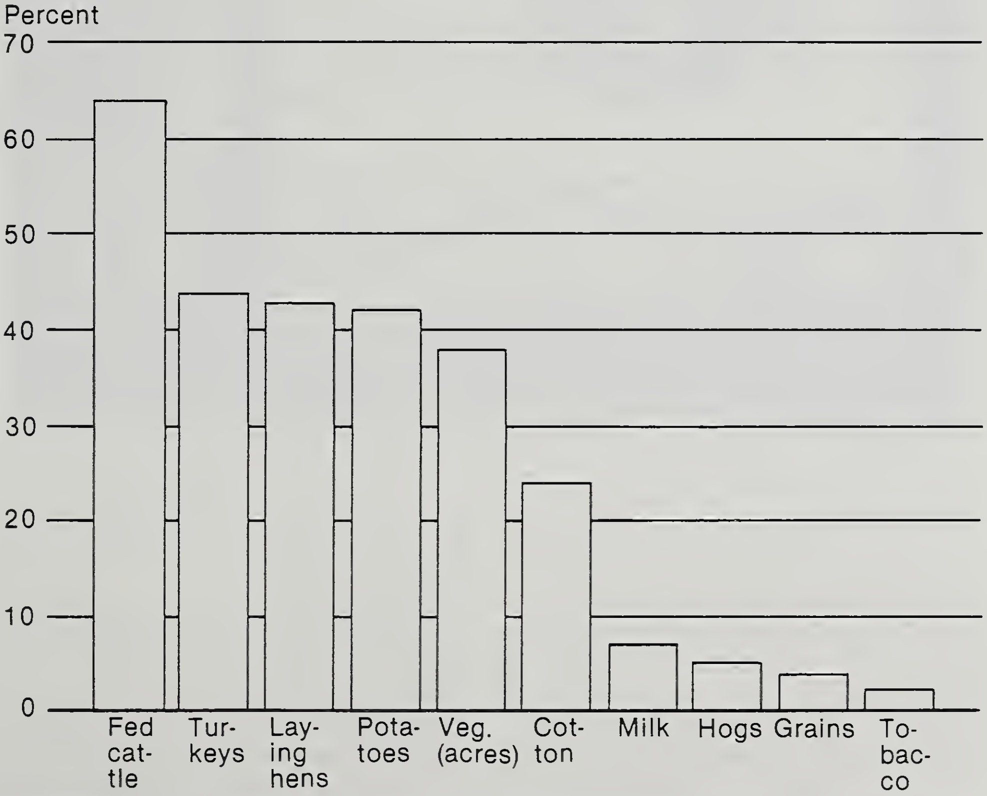
The large farms in 1974 reported out-of-pocket costs of 87 cents per sales dollar, compared with 75 cents for the average units.

Sales per acre. This takes us back to the point mentioned earlier—that large farms have more money tied up in purchased inputs and other capital items per acre than the small units. According to the last census, farms grossing more than a half million had sales of $340 per acre versus $80 for all farms.

As a rule of thumb, agricultural operations that are capital intensive—those relying heavily on nonfarm inputs—must become very efficient in production, processing, and marketing to meet the competition. Superior management is a necessary ingredient, too. Without it, the larger operations would not reap the rewards of larger total profits.

[Based on special material by George C. Coffman, National Economic Analysis Division.]

Market Shares of Farms with $500,000+ Sales in 1974



Assessing the Farm Tax Load

Restrictive agreements, preferential assessments, deferred taxes—more than *legalese* to the Nation's farmers, they're all tools for easing the land tax burdens on agriculture.

Most States have adopted some sort of differential assessment laws in recent years. The legislators have tried to recognize the unique problems of agriculture by setting special taxing and assessment rates and procedures.

Most of these laws, passed since the early 1970's, are outgrowths of rocketing land values. Sharp gains in farm real estate prices—25 percent in 1974, 14 percent in 1975 and 1976, 17 percent last year, and 9 percent in the year ending February 1, 1978—are two-edged swords, however.

On the one hand, many farmers are "paper rich," because of the rising sales values of land.

Creditable equity. But direct benefits to the farmer are limited to the equity in the land: As the total selling price mushroomed, so did the equity, meaning farmers were usually eligible for more credit. Land, then, was almost as good as, well, money in the bank. Trouble is, to stay in business, farmers have had to borrow more money, so that equity growth has been limited.

And at the same time, the taxes on that farmland have escalated. Farm commodity values have seldom kept pace with land taxes and values, so many farmers pay a larger share of their incomes in taxes than they did before the escalation in land prices.

To fight that problem, most States have passed laws that give farmers a break, in that they aren't taxed on the same basis as the owner of, say, an office building in a city.

Offices vs. farmland. The reasoning is simple: A downtown office building can easily be worth millions of dollars and sit on only an acre of land. An entire farm can be worth a good deal less—the average farm is worth about $196,000—and sit on hundreds of acres. If both sites are taxed at the same per-acre rate, the farmer will pay more relative to income. So much more that some farmers have had to sell out to avoid high land taxes.

That brings up another reason for the differential assessment laws. Many State legislatures were trying to deal with the problem of disappearing agriculture and other open space by offering lower tax rates to land that was not built upon. In other words, they were trying to frame land use policy through the tax structure.

The goal of law, exactly. But there's a problem. Some of the State laws don't offer complete definitions. What, for example, is agriculture and agricultural land? What is "open space"? The groups supporting differential assessment bills usually have had general

ideas—green grass and trees, farms, and so forth. But "open space" may be any acreage without concentrations of buildings.

That could include a dump, and most States have little interest in preserving dumps as open spaces. The laws need to be more specific. Vague terms such as "open space" are invitations to trouble.

Another problem is in the length of time that land must be in agricultural use to qualify for a tax break.

What happened in some areas was this: A person or company would purchase a plot of land and declare it to be agricultural land, thus eligible for special tax treatment. Indeed, often the land in question had been used as farmland.

Not really a farm. But the new landowners merely held the land until they were ready to build—perhaps pasturing a few beef cattle—and up would go a shopping center or other urban property, taking that land out of agricultural use forever.

One plug for that loophole sets a time period for eligibility for special tax treatment. If the landowner takes the acreage out of farming, taxes at the regular rate for a specified number of years prior to the buildup automatically become due. Hence the term "deferred taxes" for farmland.

Of course, if the land remains in agriculture, the "extra" taxes never come due. And that's the encouragement to keep land in farming.

Moreover, many economists doubt that some of these differential assessment laws will really have much impact on the rush to convert farmland to commercial or housing property. The doubts are strongest for preferential assessment laws written without deferred taxes or restrictive land use agreements.

More puzzles in law. A different problem with some differential assessment laws has cropped up in a few States. It has to do with the fact that land values depend on the earning capacity of the land—the farm income.

Tax experts are wrestling with deciding what income standards should be used for farmland valuation. In other words, how much should assessors assume a farmer could earn from a certain acreage? Should the standard be keyed to the most efficient operators, or to those marginal producers—the average and below average farmers?

Another issue presents itself in the taxing of buildings and other capital on farmland. Structures represent a large part of the capital an operator has tied up in the farm.

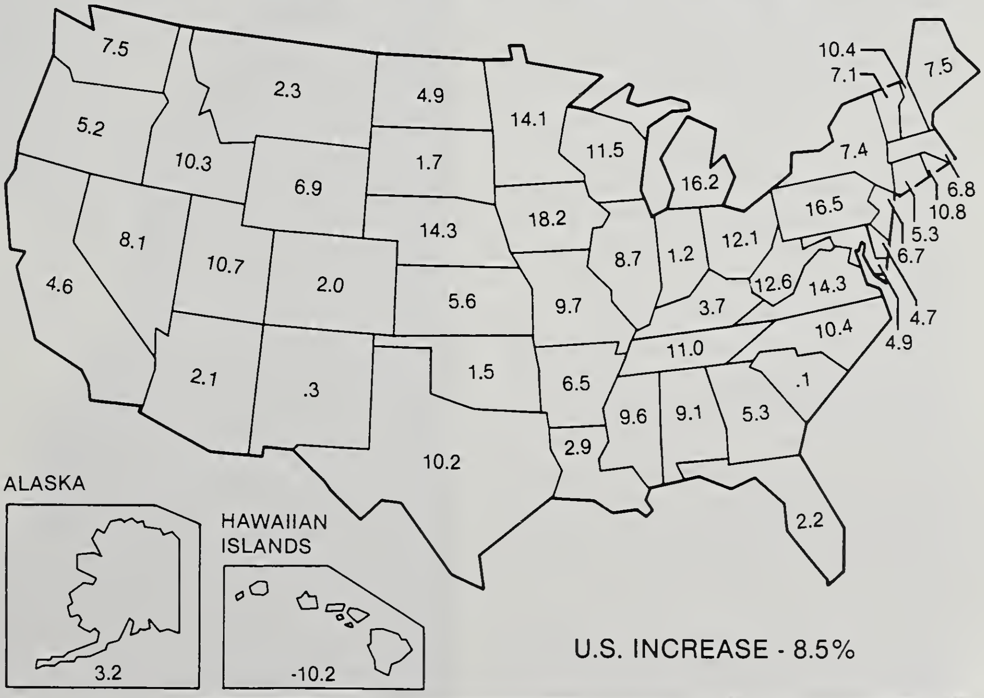
Buildings, according to USDA estimates, made up about 17 percent of the value of capital on farmland in the mid-1970's. They're often taxed the same as nonfarm property, while other forms of capital, such as drainage tiles, usually are taxed with the land.

Data on the worth of capital in farm real estate, other than buildings, aren't available—a lack that points to the need for more research.

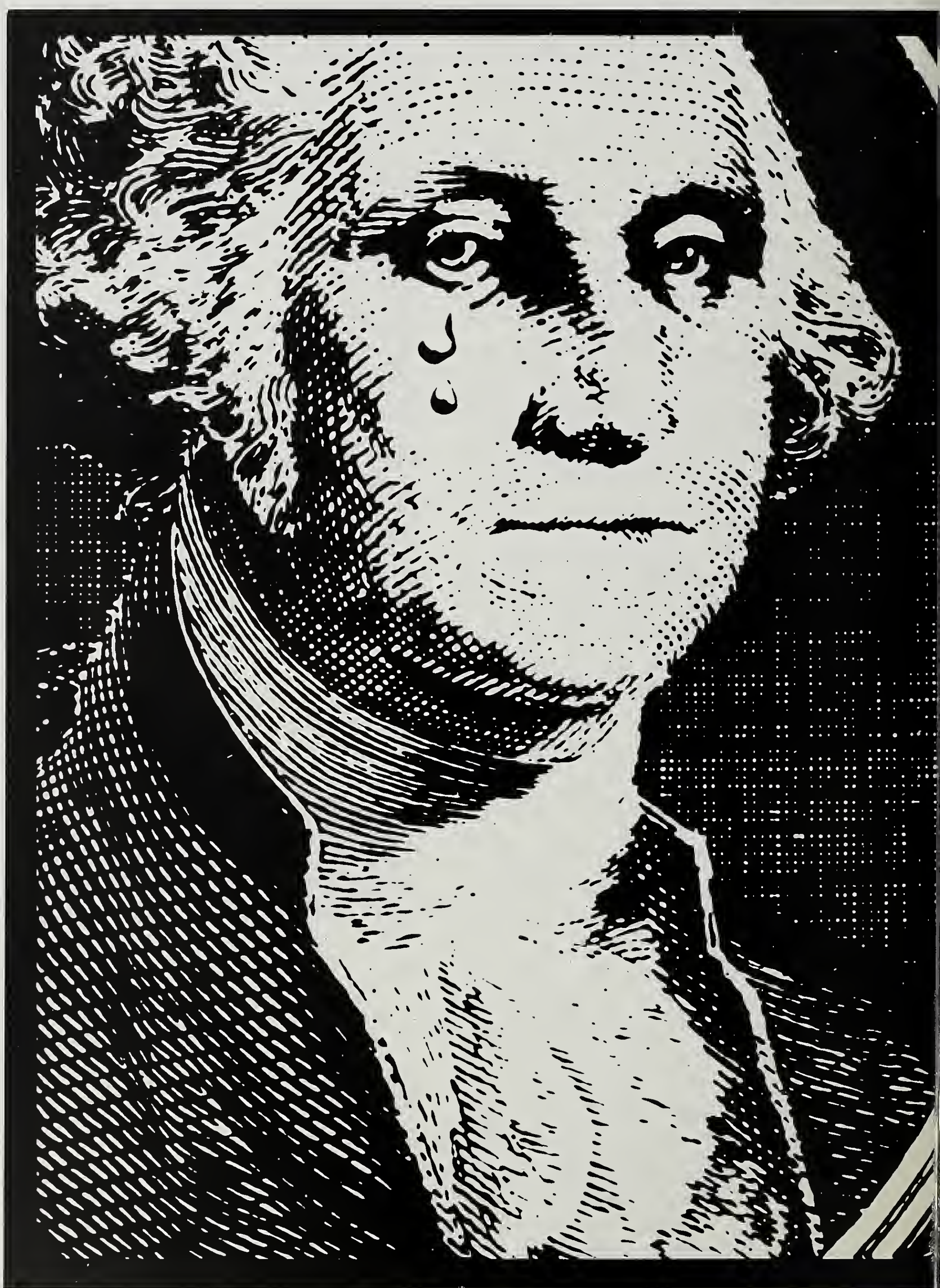
These are tough questions for lawmakers to consider as they fine tune differential assessment laws.

[Based on "Differential Assessment and the Land Market: A Commentary," paper by Thomas F. Hady, Economic Development Division, presented at the Conference on Preferential Tax Treatment for Agricultural Land at the Lincoln Institute of Land Policy, Cambridge, Mass., June 12-13, 1978.]

CHANGES IN TAXES LEVIED ON FARM REAL ESTATE, PERCENTAGE 1975-76



The High Price of Gearing Up



The plague of inflation has struck highly mechanized American agriculture in one of its most tender spots since 1972: the cost of farm equipment.

While prices for all farm production items soared 65 percent during 1972-77, farm machinery prices skyrocketed 83 percent—twice the rate of general U.S. inflation in that period. Once they started upward, prices have been kept soaring by inflation.

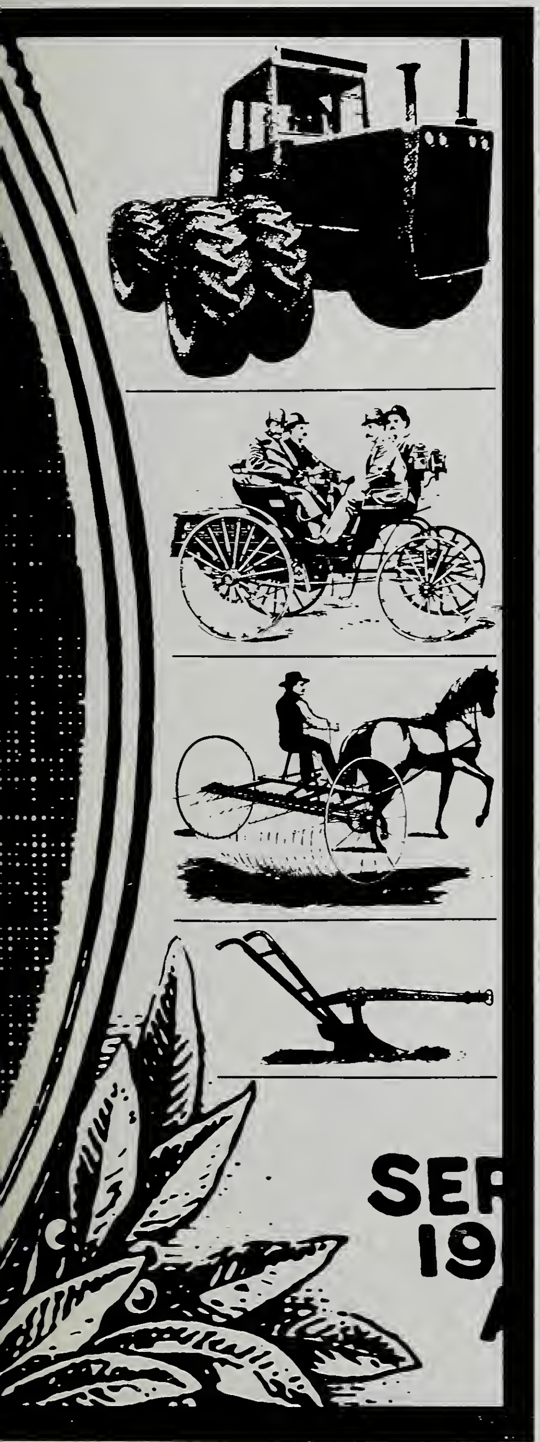
But what helped to give machinery prices the extra momentum in the first place? A closer examination shows that the steepest increases in equipment prices occurred in 1973-75—years immediately following a worldwide surge in demand for U.S. grains that nearly doubled farm income in 1973 compared with 1972.

Incentive to expand. Thus, because of incentives from higher income, American farmers began scrambling to increase their acreage, and many producers rushed to buy new equipment to meet the needs of their expanding operations.

To meet the unexpected surge in demand, agricultural machinery manufacturers increased their output to record levels in both 1973 and 1974. However, a shortage of component parts and materials hampered them.

All seven major manufacturers struggled with shortages and, since they could not fill all orders for machinery, prices were bid up sharply and supplies were allocated to dealers. The tight supply and high demand in turn lessened competition among dealers, allowing their margins to widen to 14.9 percent in 1974.

The great price jump. As a result of higher prices charged by manufacturers, wider dealer margins, and higher trans-



portation costs, prices paid by farmers jumped 42 percent in this two-year period.

By far, the largest component of the price increase was a 44-percent jump in wholesale prices paid by farm machinery dealers to equipment manufacturers. This accounted for 83 percent of the total price rise.

The second largest element in the increase was in dealer margins, which increased 39 percent in that period. Accounting for 12 percent of the total price rise, this increase reflects the increased cost of doing business, as well as the supply and demand conditions.

Freight charges. The remaining 5 percent of the total price increase was due to rising expenses for freight charges and setup and delivery charges. Freight charges rose 45 percent due to higher rates, increased weights, and distances hauled. Setup and delivery costs jumped 34 percent in that same period.

While overall machinery and equipment prices jumped greatly, significant variations occurred according to the type of equipment concerned.

For example, tractor prices rose only 36 percent during the 1973-75 period of high inflation—6 percentage points less than the 42 percent rise for all farm machinery.

Yet, a closer look reveals great variations according to the type of tractor. Prices for medium tractors rose 33 percent, while prices for the largest tractors jumped 52 percent.

Large tractors popular. This sharper price hike for large tractors is attributable to stronger demand, tighter supply, and improved quality for this type of equipment, including such optional equipment as air conditioners and heaters.

Overall, wholesale prices paid by dealers accounted for 87 percent of the total price rise.

Still, dealer margins improved significantly and also more for the larger tractors than the smaller models. The margin increase for small tractors rose only 11 percent between 1973 and 1975—much less than the rate of increase in tractor prices and other costs. Yet, for largest sized tractors, the dealer margin rose 51 percent.

What's behind the difference in dealer margins? The small increase for smaller tractors may reflect a dealer need to boost sales of these machines; while, with the largest machines, dealers increased their margin by the same percentage as the manufacturers increased their price, since demand was so strong and supply so tight.

A similar pattern. Freight costs also followed a similar pattern of disproportionately large cost increases for large machines. This may be partly due to increased weights for large tractors, and greater shipping distances between manufacturers and dealers.

Price increases for combines were far greater, percentagewise, than the boost in tractor prices.

Sales prices for medium and large combines leaped 52 percent from 1973 to 1975. Wholesale prices paid by farm machinery dealers accounted for about three-fourths of the increase in prices paid by farmers. Dealer margins accounted for another fifth of the total sales price increase.

Combines and cornheads. Dealer margins for combines and cornheads averaged 15.2 percent over the 3-year period compared with 13.6 percent for all tractors.

Forage equipment costs during that period rose 32 percent—the least among

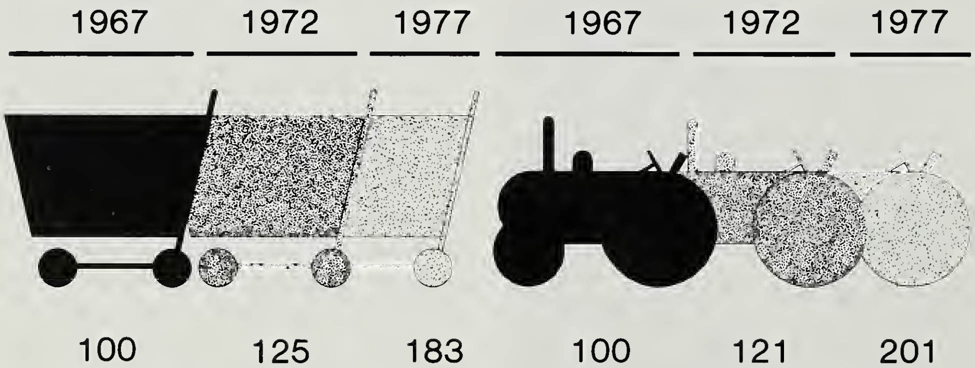
farm machinery subgroups. Wholesale price increases accounted for 89 percent of the total rise, while dealer margins increases accounted for only 4 percent of the jump. In fact, dealer margins actually declined for hay balers and hay rakes during that time.

Tillage equipment sales prices soared 58 percent, with wholesale prices rising 62 percent to account for 83 percent of the total jump. Dealer margins increases accounted for 11 percent of the rise.

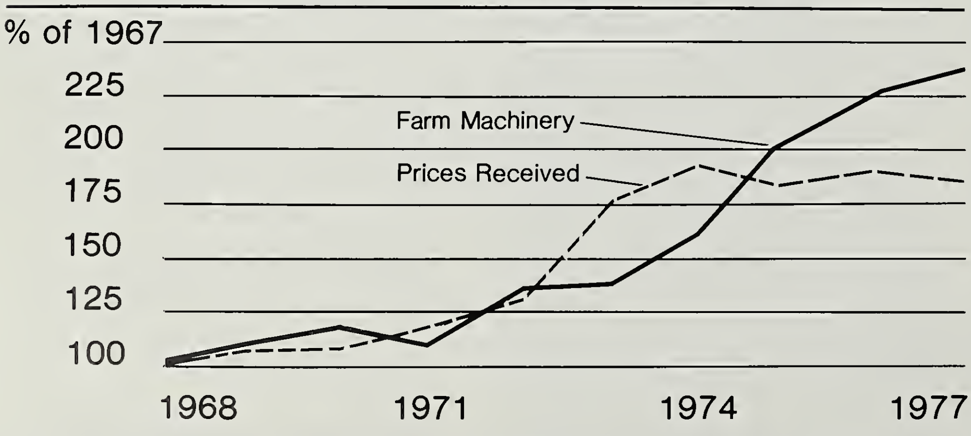
Other equipment. Increases also occurred in sales prices of manure spreaders, front-end loaders, and forage wagons—an average hike of 43 percent. Wholesale prices accounted for 77 percent of the rise, with dealer margins contributing another 16 percent.

Farm Equipment Costs Versus Prices Paid to Farmers

Farm equipment prices (tractor) have doubled, outstripping increases in prices received for farm products (basket) since 1967.



Prices Paid by Farmers for Farm Equipment; Prices Received for Farm Products



While costs for the basic farm machines were soaring, the total outlay was also increased by greater demand for optional equipment.

During the 1973-75 period, more and more farmers turned to such options as air conditioners, heaters, cabs for large tractors and combines, and roll bars on smaller tractors.

Statistics show, for example, that air conditioners became much more popular on large tractors in 1975 than in 1973. In the 120-129 hp class, 64 percent of all units sold in 1975 were air conditioned. In 1973, only 42 percent had this option.

Among large tractors with 130 hp or greater, 85 percent of 1975 sales were air conditioned, compared with 65 percent in 1973. Heaters achieved a similar 1975 popularity.

Medium combine options. In medium combine sales, 57 percent were air conditioned and 84 percent heated in 1975—compared with 27 and 69 percent respectively in 1973.

These options, while perhaps being a welcome change to farmers who spend so many hours operating equipment, are far from cheap. Such major optional equipment may add 15 to 20 percent to the purchase price of a tractor or combine. However, since many machines have no options, the average for all equipment is lower.

In 1975, options added an average of 13 percent to the cost of large tractors and 4 percent for small tractors.

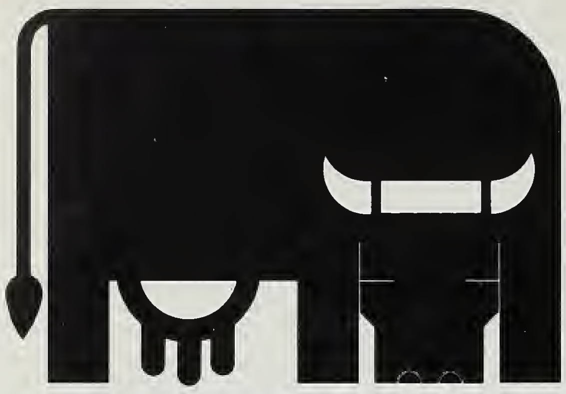
In the future, options will no doubt become more and more important elements in machinery pricing.

[Based on the report, "Farm Machinery Prices, Margins, and Related Marketing Costs," by Leland Southard, National Economic Analysis Division.]

Angling for Grade A

The flow of Grade B milk from American dairy farms has slowed to a trickle. And the supply is showing signs of drying up entirely.

For years, U.S. dairy farms have produced two grades of milk, A and B. Grade A is known as fluid milk and may be used for either drinking or manufacturing. Grade B is manufacturing milk, used for cheese, butter, dry milk, or other dairy products, and may not be used for drinking.



Generally, Grade A milk is produced under more strictly controlled sanitary and quality conditions. Otherwise, there's no difference between the grades, and Grade A milk draws a higher price than Grade B.

That's important to note, because it goes a long way to explain why less Grade B milk is pouring from dairy farms today.

The milk "pool". All the revenues from the sale of Grade A milk in an area are "pooled" under Federal milk marketing orders. The Grade A farmers then receive a "blend price," representing the average value of the milk.

Grade B producers are not in the pool, and are not in Federal milk orders. Their price is the market price for manufacturing milk, and it's lower than the Grade A price. Dairy farmers producing only manufacturing milk receive only the manufacturing price.

Fluid milk processors buy the amount of Grade A they can sell for drinking. The rest is manufactured, or sold to manufacturers, who also buy Grade B. The more Grade A that can be sold as fluid milk—Class I milk—the better for producers of Grade A, who then get a higher blend price. But Grade B producers receive the same price, regardless of what the fluid market does.

More for Grade A. Over the past decade, these classified pricing policies in Federal and State milk marketing orders have boosted Grade A prices. Dairy farmers receive, on a national average, $1.37 per hundredweight more for Grade A than Grade B milk.

The shifts in the pattern of the types of milk produced are clear. In 1967, U.S. farms sold to plants and dealers 112 billion pounds of milk, 69 percent of it fluid grade. Last year, 82 percent of the 118 billion pounds sold to plants and dealers was fluid grade.

And there's been a change in the percentage of Grade A milk used as fluid. Nearly two-thirds of it was drunk in 1967, but last year only 57 percent of the fluid grade milk was used as fluid. The rest went to manufacturing.

Meanwhile, the total production of Grade A milk jumped from 79 billion pounds in 1967 to 99 billion last year, as Grade B production slipped from about 41 billion pounds in 1967 to 24 billion.

Constant milk. And that's not all bad, even from a consumer's viewpoint. Farmers are receiving higher prices for their milk, and consumers are enjoying a fairly constant supply. Without a steady supply of milk, farmers would have to go through periods of low prices caused by over-large supplies, punctuated by off-season production, when supplies would be tight and prices up.

In those seasons when farmers have extra-large supplies of Grade A milk, larger than the fluid market can handle, turning to manufacturing outlets provides farmers with a constant buyer.

Another way of looking at it: With classified pricing and pooling arrangements, many Grade A farmers have market security. That helps both farmers and consumers by stabilizing milk prices.

New system needed? If the trend to less Grade B milk continues, the whole milk pricing system could fall by the wayside. With only one grade of milk produced, new pricing standards would be needed because the present system is based on the manufacturing grade price in Minnesota-Wisconsin (the M-W price). The price of Class I milk is determined by adding a fixed amount—the Class I differential—to the M-W price.

The differential in each Federal milk market order is set by USDA, using a complicated formula. The differential, in part, is meant to reflect the additional costs incurred by producers who turn out Grade A milk. This higher price is an incentive for many producers to convert from Grade B to Grade A production.

Still a choice. Whether Grade B milk production will dry up entirely is still to be decided. If the price differentials between fluid and manufacturing grades of milk were reduced or elimated, the trend could reverse, and farmers might be encouraged to turn out more manufacturing milk.

A reversal of the trend wouldn't be a problem to milk producers and marketers, unless farmers cut back on Grade A production so much that a shortage occurred. But that's not likely to happen, considering Grade A production exceeds fluid market needs by such a great margin now.

Barring such an extreme turnaround in milk production, neither market security nor fluid milk price stability would be affected.

Side effects. Another side effect of reducing the price differentials between the fluid and manufacturing-use classes, even gradually, would be to reduce prices to Grade A producers. At the same time, prices of fluid milk to consumers, relative to manufactured dairy product prices, would dip a little.

The effect such a reduction in the differential might have on the prices of manufactured goods depends on Federal purchases under the dairy price support program. Consumer prices for manufactured products probably wouldn't change if the Grade B milk price were at the Federal support floor.

Lowering the Class I differentials would reduce fluid milk prices and in-

crease fluid consumption. This would reduce Government purchases, leaving consumer prices for manufactured dairy products unchanged.

Tighter supplies. If the manufacturing milk price is above the price support floor, lowering the Class I differentials would decrease fluid milk prices and boost fluid consumption, the same as in the other circumstance, but there'd be a difference: Because very little milk would go to the Government, there would be less Grade A for manufacturing, and the tighter supply would force the price of manufacturing milk to jump, followed by rising consumer prices for manufactured dairy products.

Throughout these changes, though, regardless of what happened to manufacturing milk prices, fluid milk prices would probably decline a little.

Change in direction. But the Grade B production would probably stop running downhill. Farmers producing it now would probably continue, even though the pressure on them to convert to bulk milk handling systems and to upgrade sanitary facilities would go on.

While they may make those changes in their Grade B operations, most of them would stop short of making all the changes needed for Grade A production. With Grade A milk prices slipping, there'd be little advantage in going all the way to fluid milk production.

Of the changes that have already occurred in the type of milk produced, pricing policies weren't alone in causing them. Higher production costs for Grade B, wrought by more stringent sanitary standards, helped reduce the difference in production costs between the grades. The result: Grade A production was made more attractive to those farmers who used to turn out only manufacturing milk.

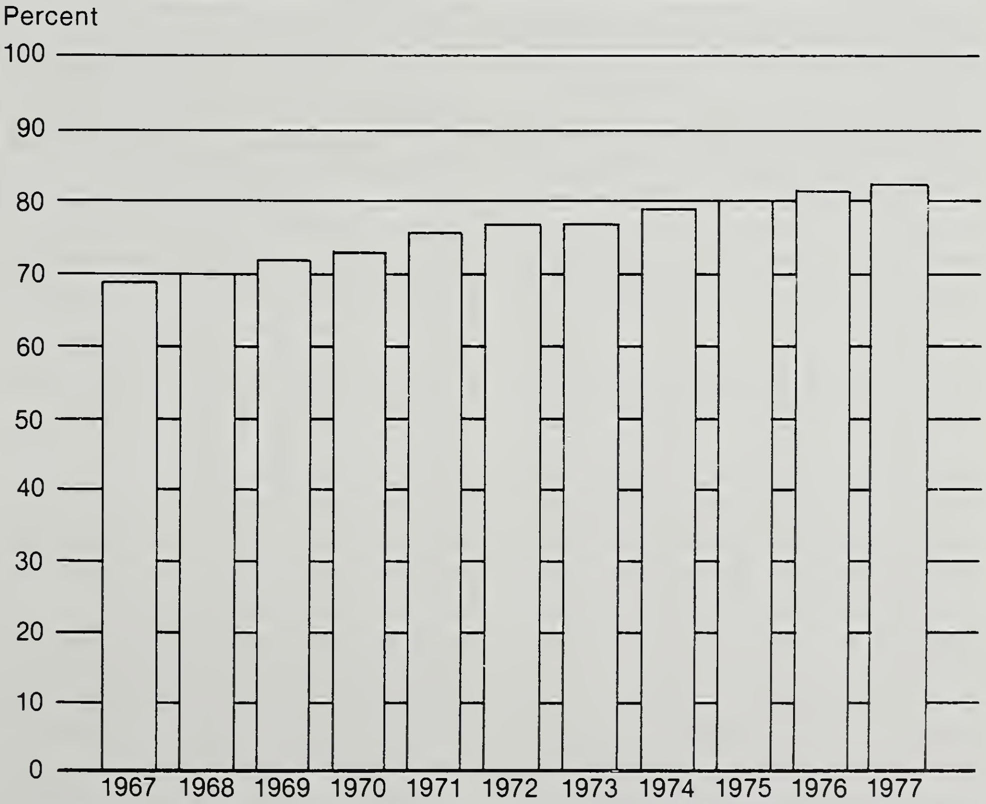
A push to bulk. Also, manufacturers have pushed farmers with Grade B systems to install bulk handling equipment. It's more expensive initially, but milk transportation costs are lower with bulk handling, and so are labor costs.

Installing bulk handling equipment in a Grade B operation is one of the biggest steps in conversion to Grade A. And many farmers, seeing they've already got a leg up on the shift, simply go all the way, dropping their Grade B operation in an attempt to get higher milk prices for Grade A milk.

In any event, people shouldn't assume that Grade B milk is a thing of the past; not yet, anyway. Changes in pricing policies could be made to preserve the Grade B system, if policymakers decide it ought to be preserved. Such changes could be made without causing disorderly marketing, highlighted by market insecurity and wildly swinging milk prices.

[Based on the the article, "The Disappearance of the Grade B Milk Market—A Matter of Policy Choice?", by Boyd M. Buxton, Commodity Economics Division.]

Percentage of U.S. Milk Produced as Fluid Grade*



*Calculated by multiplying whole milk sold to plants and dealers by the percent fluid grade and adding the milk and cream retailed by farmers.

Oil, Water, and Rocks: Mixing It Up in the West

Water and oil don't mix, the saying goes. But in the water-short Western States, that old adage may soon be put to the test.

Three of these States, Colorado, Utah, and Wyoming, hide vast quantities of oil shale—rocks soaked with oil that can be extracted through a complicated heating process, perhaps requiring lots of water—precious to agriculture in these dry States.

Oil shale processing plants can squeeze as much as 25 gallons of oil from a ton of shale. Buried under the three States wait an estimated 2 trillion barrels of oil. Some 600 billion are recoverable using current technology.

That oil could ease the burden of importing billions of barrels of oil. Last year, the U.S. burned about 6.7 billion barrels of crude, nearly half of it from overseas.

Great expectations. Thinking of oil shale as the "Great Energy Liberator" could lead to disappointment, though. While the amount of oil trapped in shale is tremendous, it's unlikely we could remove the black gold at a rate faster than 2 million barrels a day—and that would sometimes put energy needs head to head against agricultural water needs.

On the drawing boards are several Colorado water projects meant to expand agricultural production in future years, as well as supply other mining industries, such as surface coal mining. Some of this, the irrigated farming and some of the proposed coal mining, might have to be relegated to the fiction shelf if a large oil shale industry, with heavy water demands, is built up.

That could happen by the turn of the century, or a little sooner. One oil company plans a 100,000-barrel-a-day facility by the early 1980's, and another moderately sized operation is on the books for a couple of years later.

Two systems. Two basic approaches to oil shale mining and processing face producers: removing the shale from the earth and transporting it to a processing plant, and the *in situ* method.

The first involves surface or open pit mining. After the rock is dug out, it's transported to a surface retort—heater—where it's ground up and heated. The retort is often said to resemble a giant pressure cooker. The oil is drained off and the spent shale is discarded.

The *in situ* method is largely experimental, and involves heating the shale undergound, without first moving it. This system uses less water and requires fewer workers and less capital to get started. But, thus far, experiments haven't been entirely successful.

In practice, oil producers are planning to use a combination of methods. In a modified *in situ* process, enough shale will be dug to form a large room underground. That shale will go to a surface retort, and will represent about 20 percent of the shale in a particular location.

Chimneys of shale. Engineers will then drill holes into the walls of the room, filling them and vertical shafts to the surface with explosives. When the explosives are touched off, shale will be broken into bits, creating rooms and chimneys of fractured shale. From the top, the shale will be set afire, with the heat causing the oil to flow from the rocks. After the goo collects at the bottom of the mine, sump pumps will send it on to be processed.

The cost of all this in terms of water and land can only be estimated by pilot projects—no commercial operations exist for accurate measurements. But it's clear it involves a lot of water and land. An oil shale industry that could turn out 250,000 barrels of crude oil each day would require some 27,000 acre-feet of water a year. That's only a fraction of the water available in those States, but, on the other hand, 250,000 barrels of oil is barely a trickle compared with American oil consumption last year of some 18.4 million barrels a day.

Oil barrels and water acres. Boosting the oil production to 2 million barrels a day raises the water use to nearly 226,000 acre-feet a year, out of an estimated 451,000 acre-feet still potentially available in that three-State area.

But the problem isn't quite so clear cut as the amount of water in the region. Most of the available water is in Utah and Wyoming, but most of the rich oil shale is in Colorado. Colorado, however, has little water to spare. In other words, where the oil is, the water isn't.

Further complicating the business are States' water rights. All of the water for development of oil shale would have to come from the Upper Colorado River Basin, winding through parts of all three States. Under agreements among the States and with Mexico, and through court decisions, water rights have been allocated among the States of the Basin.

Long division? But these water compacts and other arrangements for allocating water generally overestimated original river flows. Because of this, agreements among the States and the treaty with Mexico actually divide up more water than the Basin produces.

Clearly, something's got to give. But what? Answers don't readily present themselves.

While Colorado may have the lion's share of oil-rich shale and less potential for new water sources, that doesn't necessarily mean the Rocky Mountain State has to forget about oil altogether. According to a Department of Interior report, *Water for Energy in the Upper Colorado River Basin,* an estimated 90,000 acre-feet of water is available in Colorado for shale oil production. That State could free up additional water by shifting its planned water use patterns.

A "worst case" scenario. If one assumes that all the water for a 2-million-barrel-a-day oil shale industry is taken out of farming, rather than out of other water-intensive industries, irrigated agriculture in the drainage basin holding the oil shale in Colorado would have to be chopped about 20 percent—that's 81,000 of Colorado's 413,000 irrigated acres in the two river basins containing oil shale.

The amount of water needed for agriculture varies considerably with the type of crops grown, the methods used for irrigation, and the weather. Farmers can't do anything about the weather, but certainly some water presently used for farming is applied inefficiently, so some savings are possible.

But these "savings" are small, because even water spread inefficiently may return to the river eventually. In that sense, water may not be "lost," only waylaid.

Drier disposals. In the prospective shale oil industry, some water savings over current estimates are possible. For example, it's estimated that about 60 percent of the water used in oil shale processing aids in the disposal of spent shale, but recent experiments indicate that share can be slashed.

In other words, if water is cheap and readily available, agriculture and oil shale industries will use it to its fullest. But if water remains in short supply, or becomes more expensive, operators may develop systems that use considerably less water.

Utah is preparing for the onset of oil shale mining and processing by planning a new dam on the White River. The dam would allow development, in addition to oil shale, of about 13,000 acres of irrigated Indian land. So, at least in the early stages of oil shale development, agricultural output in Utah might rise.

Land losses. To some farmers and ranchers, the loss of land to oil shale is more significant than the loss of water. None of the three States would lose more than 1 percent of its current grazing lands. But, that's somewhat misleading because of the nature of the new industry.

Because of its concentrations, a few individual ranches could be displaced entirely, even though the overall effect on the States' agricultural land availability would be small.

The competition for land between agriculture and oil shale probably won't be very great. The price of farmland in regions with lots of oil shale might surge, but that's nothing new in Western States. Recreational uses for land have already priced some acreage out of the reach of agriculture, a trend that might continue.

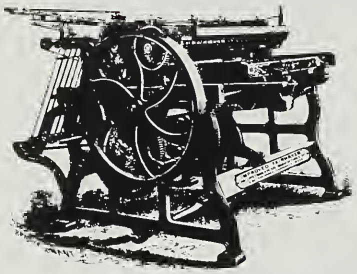
Disturbing land. One estimate put the land disturbed by a 1-million-barrel-a-day oil shale industry at about 4,000 additional acres annually. A further 20,000 acres would be developed permanently for plant sites and urban uses as an effect of an industry that size. The urbanized land might well come out of irrigated farms.

While the 4,000 new acres disturbed per year, and 20,000 acres for urban use, might not seem large for a three-State region, in reality the land diversion would be concentrated in the relatively small Piceance Basin.

An oil and water mixture in the Western States? Could be, say the experts. With careful planning, farming and energy production could exist side by side, but not without compromise and accommodation by both.

[Based on Natural Resource Economics Division Working Paper No. 46, "Agricultural Impacts of Oil Shale Development," by Norman K. Whittlesey, Professor, Department of Agricultural Economics, Washington State University.]

Recent Publications



Single copies of the publications listed here are available free from *Farm Index*, Economics, Statistics, and Cooperatives Service, Rm. 300 GHI, 500 12th St. S.W., U.S. Dept. of Agriculture, Washington, D.C. 20250. However, publications indicated by (*) may be obtained only by writing to the experiment station or university indicated. For addresses, see July and December issues of *Farm Index*. Publications marked with (#) may be purchased from NTIS, U.S. Dept. of Commerce, 5285 Port Royal Rd., Springfield, Va. 22161, at the price listed.

An Analysis of the UNCTAD Integrated Programme for Commodities. John W. Murray, National Economic Analysis Division; and L. Jay Atkinson, Foreign Demand and Competition Division. FAER-148.

The developing countries have proposed an Integrated Programme for Commodities (IPC), through the United Nations Conference on Trade and Development (UNCTAD) Secretariat. This study takes a look at the money needed for the IPC operation. The commodities covered are primarily those that are produced and exported by the developing, rather than the developed, countries.

Farm Financial Conditions: Perspectives and Prospects, August 1978. Eldon E. Weeks, National Economic Analysis Division. ESCS-33.

"The overall financial health of the (agricultural) industry appears sound" according to this report. Among the topics covered are farm credit, crop production, livestock, farm income, and capital formation. The cash flow squeeze on farmers, caused by rising production costs and varying receipts, is also discussed.

Near-Infrared Reflectance Instrument Analysis of Grain Constituents: A Cost Study. Floyd F. Niernberger, Commodity Economics Division. PB 282 744. #

Measurement of protein and moisture content in grain is an important component in setting the price of that grain. This report examines the cost of using modern near-infrared reflectance (NIR) instruments for those measurements. NIR costs are compared with more conventional commercial methods of measurement, and it's found that NIR has some advantages. ($4)

U.S.S.R. Agricultural Situation, Review of 1977 and Outlook for 1978. Centrally Planned Countries Program Area, Foreign Demand and Competition Division. Supplement 1 to WAS-15.

The Soviet Union last year saw reduced grain and sugar beet output—reflected in increased purchases of some commodities from the U.S. this year—but cotton, oilseed, and fruit crops improved, offsetting other losses. Meat output in 1977 was up 9 percent over 1976. Overall, U.S. exports to the U.S.S.R. declined sharply last year, to about $1 billion. Exports this year may rise to $1.5 billion, according to these projections, partly the result of increased grain purchases.

Effects of Small Watershed Development on Land Values. James Kasal, Natural Resource Economics Division. AER-404.

Small watershed flood control development was mandated by Public Law 566. Since then, the programs underway have had varying degrees of influence on structure site land values. This report studies those impacts, and finds that economics, location, climate, and land use differences are important factors in assessing land value changes.

Farmer Credit Survey, March 1978. Prepared by the National Economic Analysis Division. ESCS-17.

Money is tight for some farmers, even though this study finds that credit will be generally available in 1978. Those farmers having trouble getting loans are often found to be marginal producers, or those who are already too deeply in debt. Details of the survey are given including the answers of more than 5,300 banks and 171 Production Credit Associations to survey questions.

Alternative Futures for World Food in 1985. Anthony Rojko, Patrick O'Brien, Donald Regier, Arthur Coffing, and Linda Bailey, Foreign Demand and Competition Division. FAER-149.

Detailed supply-distribution tables from the world grain-oilseeds-livestock (GOL) projections are offered in this, the second volume of the series. Other volumes contain an analytical report (already issued), and, still to come, the mathematical equations used in the GOL model and a user's manual. Volume 2 is expected to be updated periodically.

U.S. Foreign Agricultural Trade Statistical Report, Fiscal Year 1977. A Supplement to the Monthly Foreign Agricultural Trade of the United States. Statistics Program Area, Foreign Demand and Competition Division. ESCS-112.

This publication is a statistical reference for U.S. trade in agricultural products. Detailed commodity and country tables show exports and imports for the most recent 2-year period. In addition, historical series are presented for the major commodities and commodity groups.

Economic Trends

[1] Ratio of index of prices received by farmers to index of prices paid, interest, taxes, and farm wage rates. [2] Revised to adapt to weighting structure and retail price indices for domestically produced farm foods from the new Consumer Price Index for all urban consumers (CPI-U) published by the Bureau of Labor Statistics. [3] Annual and quarterly data are on a 50-State basis. [4] Annual rates seasonally adjusted second quarter. [5] Seasonally adjusted. [6] As of March 1, 1967. [7] As of February 1. *Beginning January 1978 for all urban consumers.

Source: USDA (Agricultural Prices, Foreign Agricultural Trade, and Farm Real Estate Market Developments); U.S. Dept. of Commerce (Current Industrial Reports, Business News Reports, Monthly Retail Trade Report, and Survey of Current Business); and U.S. Dept. of Labor (The Labor Force and Wholesale and Consumer Price Index).

Item	Unit or Base Period	1967	1977 Year	1977 July	1978 May	1978 June	1978 July
Prices:							
Prices received by farmers	1967=100	—	183	180	215	217	215
Crops	1967=100	—	192	181	212	216	212
Livestock and products	1967=100	—	175	179	217	219	217
Prices paid, interest, taxes, and wage rates	1967=100	—	202	203	219	220	220
Prices paid (living and production)	1967=100	—	196	197	212	213	214
Production items	1967=100	—	200	201	217	218	218
Ratio [1]	1967=100	—	90	89	98	99	98
Producer prices, all commodities	1967=100	—	194.2	194.8	207.9	209.4	210.6
Industrial commodities	1967=100	—	195.1	195.9	207.3	208.5	209.9
Farm products	1967=100	—	192.5	190.5	215.7	219.5	219.9
Processed foods and feeds	1967=100	—	186.1	187.2	202.5	204.6	204.5
Consumer price index, all items*	1967=100	—	181.5	182.6	193.3	195.3	196.7
Food*	1967=100	—	192.2	194.6	210.3	213.8	215.0
Farm Food Market Basket: [2]							
Retail cost	1967=100	—	179.2	180.4	198.8	203.6	204.5
Farm value	1967=100	—	178.1	180.8	211.6	215.8	216.2
Farm-retail spread	1967=100	—	180.0	179.6	191.1	196.3	197.5
Farmers' share of retail cost	Percent	—	38	38	40	40	40
Farm Income: [3]							
Volume of farm marketings	1967=100	—	125	—	—	—	—
Cash receipts from farm marketings	Million dollars	42,817	96,084	7,012	7,749	8,838	8,462
Crops	Million dollars	18,434	48,519	3,321	2,782	3,571	3,954
Livestock and products	Million dollars	24,383	47,565	3,691	4,967	4,767	4,508
Gross income [4]	Billion dollars	49.9	108.1	—	—	122.5	—
Farm production expenses [4]	Billion dollars	38.2	88.0	—	—	96.0	—
Net income before inventory adjustment [4]	Billion dollars	11.7	20.1	—	—	26.5	—
Agricultural Trade:							
Agricultural exports	Million dollars	6,380	23,671	1,780	2,729	2,640	2,172
Agricultural imports	Million dollars	4,452	13,459	1,015	1,277	1,149	1,187
Land Values:							
Average value per acre	Dollars	[6] 168	[7] 450	—	[7] 490	—	—
Total value of farm real estate	Billion dollars	[6] 189	[7] 482	—	[7] 524	—	—
Gross National Product: [4]	Billion dollars	796.3	1,887.2	—	—	2,083.2	—
Consumption	Billion dollars	490.4	1,206.5	—	—	1,324.9	—
Investment	Billion dollars	120.8	297.8	—	—	344.0	—
Government expenditures	Billion dollars	180.2	394.0	—	—	424.5	—
Net exports	Billion dollars	4.9	-11.1	—	—	-10.2	—
Income and Spending: [5]							
Personal income, annual rate	Billion dollars	6,266	1,529.0	1,533.5	1,682.1	1,695.0	1,719.2
Total retail sales, monthly rate	Billion dollars	24.4	59.0	58.6	64.2	64.3	64.4
Retail sales of food group, monthly rate	Billion dollars	5.8	13.0	13.1	14.3	14.3	14.4
Employment and Wages: [5]							
Total civilian employment	Millions	74.4	90.5	90.6	94.1	94.8	94.4
Agricultural	Millions	3.8	3.2	3.2	3.2	3.5	3.4
Rate of unemployment	Percent	3.8	7.0	6.9	6.1	5.7	6.2
Workweek in manufacturing	Hours	40.6	40.3	40.2	40.3	40.4	40.4
Hourly earnings in manufacturing, unadjusted	Dollars	2.83	5.63	5.65	6.02	6.07	6.12
Industrial Production: [5]	1967=100	—	137.1	138.7	143.9	144.6	145.3
Manufacturers' Shipments and Inventories: [5]							
Total shipments, monthly rate	Million dollars	46,487	111,256	109,827	123,959	125,512	—
Total inventories, book value end of month	Million dollars	84,527	179,714	177,297	187,689	189,083	—
Total new orders, monthly rate	Million dollars	47,062	112,842	108,868	128,843	128,396	—

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